

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

TRANSLATION
PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing **See form PCT/ISA/210**
(day/month/year)

Applicant's or agent's file reference

347175- D21676

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/FR2005/000011

International filing date (day/month/year)

05.01.2005

Priority date (day/month/year)

06.01.2004

International Patent Classification (IPC) or both national classification and IPC

B01D9/00, A23G9/00, B29B7/32, B01F5/06

Applicant

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

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Box No. I	Basis of this opinion
1.	<p>With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).</p>
2.	<p>With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> in written format</p> <p><input type="checkbox"/> in computer readable form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed.</p> <p><input type="checkbox"/> filed together with the international application in computer readable form.</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p>
3.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
4.	<p>Additional comments:</p>

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	4, 7-9, 13-19, 22-24	YES
	Claims	1-3, 5, 6, 10-12, 20, 21	NO
Inventive step (IS)	Claims	4, 7-9	YES
	Claims	1-3, 5, 6, 10-24	NO
Industrial applicability (IA)	Claims	1-24	YES
	Claims		NO
2. Citations and explanations:			
<p>1. <u>Novelty</u></p> <p>1.1 WO 02/13618 (D1) describes a partial crystallization device comprising a pump (figure 1a, "HHP") for circulating the solution in a circuit of a heat exchanger formed from a tube in contact with a cooling circuit ("STMX"; "STMX" 15; STMX); the three static mixers also constitute a heat exchanger: see page 13, lines 10-16). The circuit of the exchanger comprises a tube (15) through which the liquid flows and does not include any obstacles. Consequently, the device according to D1 appears to comprise static means capable of delaying the appearance of crystals (see the objection with regard to clarity in Box VIII below). The material to be partially crystallized is then sent to a static mixer that appears capable of suppressing supercooling (see the objection with regard to clarity in Box VIII below). Consequently, the subject matter of claim 1 is not novel with respect to D1 (PCT Article 33(2)). D1 also discloses the features of claims 2, 6 and 10-12.</p>			

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1.2	<p>The feature "surface condition capable of delaying the appearance of crystals" also seems to be disclosed in document D1 (the material flowing through the tube 15, whose internal surface has a more or less "slight" roughness; see also the PCT guidelines, paragraph 5.34: the expression "slight roughness" cannot be used to further distinguish the subject matter claimed). Consequently, the subject matter of claims 3 and 5 is not novel with respect to D1 (PCT Article 33(2)).</p> <p>1.2 WO 00/72695 A (D2) describes a partial crystallization device comprising a pump (figure 3, "6") for circulating a solution in a circuit of a heat exchanger (exchanger "4") formed from a tube in contact with a cooling circuit (7). The circuit of the exchanger comprises a tube through which the liquid flows that does not include a static mixer. Consequently, the device according to D2 appears to include static means capable of delaying the appearance of crystals (see the objection with regard to clarity in Box VIII below). The material to be partially crystallized is then sent to a static mixer (3) that is capable of suppressing supercooling. Consequently, the subject matter of claim 1 is not novel with respect to D2 (PCT Article 33(2)). D2 discloses the features of claims 2, 3, 5 and 6 for the same reasons as document D1.</p> <p>1.3 EP-A-0 765 605 (D3) describes a partial crystallization method comprising a step that</p>

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consists of circulating a solution in a circuit (figure 2) of a heat exchanger (page 8, line 15 and following: "precooler"). The method comprises the steps of

- maintaining the temperature below freezing temperature ("undercooled") using static maintenance means (the "precooler" may be considered to be a "static" means);
- inducing suppression of the supercooling so as to cause the appearance of the crystallization ("ultrasonic treatment").

Consequently, the subject matter of claim 20 does not appear to be novel with respect to D3 (PCT Article 33(2)). The same is true for the subject matter of claims 1-3, 5 and 21.

2. Inventive step

2.1 The subject matter of claims 13 to 19 cannot establish an inventive step since the features they contain constitute a normal step for solving the problem posed for a person skilled in the art based on D1 or D2. The same is true for the subject matter of the method claims 22 to 24 based on D3 (for the introduction of a gas, see in particular D1, page 20, lines 34-35).

2.2 The subject matter of claim 4 makes it possible to prevent the attachment of crystals to the walls during the supercooling maintenance stage, and the subject matter of claims 7 to 9 constitutes an alternative to static mixers. Given that the features of these claims are absent from the

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available prior art, it is impossible to maintain that a modification of the device known from documents D1 or D2 resulting in the subject matter of the said claims is suggested in view of this available prior art (PCT Article 33(3)).

3. Industrial applicability

The possibilities for industrial application are clear from the description (PCT Article 33(4)).

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The subject matter of independent claims 1 and 20 are defined by a result to be achieved (see the expressions "static means for maintaining the supercooling" and "static means for suppressing the supercooling"), resulting in a lack of clarity within the meaning of PCT Article 6.